

Broken flowers

An analysis of the use and function of the Flower-flute in the Aztec
culture in Late-Postclassic times

Written by Jochem de Boer, S1181475

A Bachelor thesis in The Archaeology of Indian America

Supervised by Dr. A. Rojas

Leiden University, Faculty of Archaeology

14-6-2015, Final version

Table of Contents

Acknowledgements.....	4
1. Introduction	5
2. Methods and theory	9
2.1 Archaeomusicology.....	9
2.2 Music iconography.....	9
2.3 Organology.....	11
2.4 Experimental archaeology	11
2.5 Music theory	12
2.6 Ethnomusicology and Critical reading of Colonial sources	13
3. The Aztecs	15
3.1 History	15
3.2 Society	18
4. Aztec music	20
4.1 Aztec music instruments.....	20
4.1.1 Variety of Aztec instruments.....	21
4.2 Music in the Aztec society.....	22
4.2.1 The Aztec musicians	23
4.2.2 Religious significance of the Aztec music.....	25
4.2.3 Religious significance of Aztec musical instruments.....	25
5. The Flower-flute	27
5.1 The object itself.....	27
5.2 The sound it produced	32
5.3 Symbolism of the Flower-flute.....	35
6. The Toxcatl festival.....	38
6.1 Descriptions of the Toxcatl festival from Sahagún	38
6.1.1 Critical assessment of Sahagún his descriptions.....	40
6.2 The role of the Flower-flute in the Toxcatl festival.....	41

6.2.1 Pictographic representations of the Flower-flute.....	42
7. Conclusion	45
Summary (Abstract), Nederlands.....	47
Summary (Abstract), English	48
Bibliography	49
List of Figures	55

Acknowledgements

At first I would like to say that I could not have wished for a better and supportive supervisor for this thesis. Dr. Araceli Rojas has not only helped me by giving clear instructions and feedback on my work, but also by keeping me motivated during the entire process. Furthermore, I would like to thank Femke Tomas, who has aided me with the planning and structured working for this thesis. Another great help for me has been Professor of Music Oscar van Dillen, who has been a great help in explaining and interpreting the musical aspects of this thesis.

1. Introduction

Nowadays a life without music is unthinkable and affects us in many parts of our everyday life. In present times, music is used in many forms and possesses many different functions varying from entertainment to ritual, like in church choirs. With music being so important today, it then seems important to explore the role of music in past societies, in this case the Aztec society that thrived in Mesoamerica until they were conquered by the Spaniards in 1519 (Townsend 1992, 106). The Aztecs were a Mesoamerican civilization (Smith 2012, 5) who had their capital city of Tenochtitlan in the Valley of Mexico (Smith 2012, 4). The significance of the Aztec society is evident in the fact that their capital city was one of the most populous cities in the world and is known for its impressive temples and the detailed scientific and technical knowledge of its artisans and priests (Smith 2012, 1).

In this thesis it will be explored what kind of music was present in the Aztec culture and what the function of this music was within this culture. As the concept of music in the Aztec culture is being explored, a case study about one instrument will possess a central role in this thesis, the Flower-flute. This flute owes its name due to the fact that the ending of the flute has the shape of a blossoming flower (Both 2002, 279). This instrument is central to this thesis because it is an interesting case study in order to explore the use and function of Aztec music in its social context.

The flower-flute has already been extensively researched by Dr. Arnd Adje Both (2002), who has focussed its research on several flutes from the "Ethnologisches Museum Berlin". In his work, Both has looked at the organology, acoustics, music iconology, ethnohistory, and symbolism of the Flower-flute, during which he has especially done a great job at determining the tone range of the flute. Because of the research Both has done on these flutes, Both (2002) will thus be the main source and inspiration for this thesis. In addition to his work, the intention of this thesis will be to expand the knowledge of the Flower-flute and to focus more extensively on the social context of the instrument. This will be done by adding more data about the musical features of the instrument and by relating it to the Toxcatl festival, which was an annual fertility festival with many ritual aspects in which the Flower-flute played a significant role according to the colonial sources from Fray Bernadino de Sahagún (1950-1982) and Fray Diego Durán

(1984). Overall, the ritual and religious importance of the Flower-flute which are only briefly discussed in Both (2002) his work will be explored more deeply in this thesis.

Furthermore, a detailed analysis of the tone range as researched by Both (2002) of the Flower-flute will be given. This will be done with the help of expert musician and Professor of music at Codarts University of the Arts Rotterdam, Oscar van Dillen. By examining Both (2002) his work together with pictures of the Flower-flute obtained from the Ethnologisches Museum Berlin, Oscar van Dillen will use his expertise about music to explore the musical features of the Flower-flute. In doing so, hypotheses about musical features like tone range, musical scales, and playing techniques of the instrument can be made. This in turn can give us an indication about the produced sounds and the expertise of the musicians that played this instrument. Furthermore, by examining these musical features of the flute, a relation to the use and cultural significance of the instrument in the Aztec culture can be given.

Once the musical features of the Flower-flute have been determined, the function of the instrument in its social and cultural context will be explored. As mentioned before, the Flower-flute possessed a central role in the Toxcatl festival. Because of this it is important to first explore the Toxcatl festival itself. This will mainly be done by using colonial sources from Fray Bernadino de Sahagún (1950-1982) and Fray Diego Durán (1984), who have written elaborately about the Toxcatl festival and the rituals accompanying it. Once it is clear what the Toxcatl festival was about, the function of the Flower-flute within this festival shall be explored. By combining the information that is gained from examining the colonial sources about the Toxcatl festival and the Flower-flute, the pictures that have been obtained from the Ethnologisches Museum Berlin, and the examination of the flute by Oscar van Dillen, a hypothesis about the use and function of the Flower-flute in the Aztec culture can be made. This brings us to the research question of this thesis.

To be able to come to a conclusion, several research questions will have to be answered. The main research question in this thesis will be: "What was the use and function of the Flower-flute in the Aztec culture in the Late-Postclassic period?".

To answer the main research question, a division into smaller sub-questions shall be made. To provide a clear overview of the remaining sub-research questions, these will be enlisted below:

- “What is a Flower-flute?”
 - o “What are its visual characteristics?”
 - o “What are its material characteristics?”
 - o “What are its musical characteristics?”
- “What was the Flower-flute used for?”
 - o In what cultural context was it used?
- “What are the musical features of the Flower-flute?”
 - o “What sounds did it produce?”
 - o “What are the inner workings of the instrument?”
 - o “What can this instrument tell us about the expertise of the musicians that used it?”

Once these questions have been answered, we can go deeper into the use, function and cultural context of the flute, and thus providing a sound basis to come to a conclusion about the use and function of the Flower-flute in the Aztec society.

To be able to answer these research questions in a scientific correct way, there should be a theoretical framework and a variety of methods in which this subject shall be approached. Since the aim of this thesis is to get to know more about a certain music instrument, the study of music is the most important aspect of this thesis. Therefore, the main approach towards the to be used sources will be that of Archaeomusicology, which is the study of music through archaeology (Olsen 1998, 7). The methods that will be used to examine the Flower-flute will be a combination of literature studies, analysis of pictures from the museum collection of the Ethnologisches Museum Berlin, a critical reading of Colonial sources, and a conversation with music expert Oscar van Dillen. In chapter two this thesis shall elaborate more on the theoretical framework and the used methods.

In order to be able to answer the proposed research questions, it firstly is important to obtain a basic understanding of the Aztec culture and their music. Because of this, the third chapter will be a short summary about the Aztec culture and its history. For this chapter, mainly literature from Michael E. Smith (2012) and Richard F. Townsend (1992) will be used.

Afterwards, in the fourth chapter, a summary about the use of music among the Aztecs will be treated, in which the focus will be on the role of music, different varieties of music, and the instruments that were used. In this chapter literary sources from Arnd Adje Both (2007), Robert Stevenson (1968), and Fray Bernadino de Sahagún (1950-82) will mainly be used.

After this, in the fifth chapter, the focus will shift towards the main object and case study of this thesis, the Flower-flute. To do so, a lot of information derived from the research from the main inspiration and source for this thesis, Arnd Adje Both (2002) will be used, together with information from the colonial source of Fray Bernadino de Sahagún (1950-1982). Furthermore, in this chapter the analysis of the Flower-flute by music expert Oscar van Dillen will be treated. Together, these sources will provide a description of the object itself (organology), the sound it may have produced, and the symbolism of the flute.

After having established some knowledge about the Flower-flute, the social context in which this instrument was essential will be treated in chapter six, the Toxcatl festival. In this chapter a description of the Toxcatl festival after the colonial sources of Sahagún (1950-1982) and Diego Durán (1984) in combination with the interpretations from Guilhem Olivier (2002) shall be given. These descriptions shall then be critically assessed, after which the relation between the Flower-flute and the Toxcatl festival shall be explored, together with the role of the instrument in this festival.

The final chapter of this thesis will be the conclusion, in which all shall be summarized, and an answer shall be given to the main research question: "What was the use and function of the Flower-flute in the Aztec culture in the Late-Postclassic?".

2. Methods and theory

In order to answer the proposed main research question and the sub-research questions, a combination of theories and methods applicable to this thesis should be examined. As stated before, the study of music is the most important aspect of this thesis, and therefore the main approach towards the to be used sources will be that of Archaeomusicology/music archaeology. Music archaeology is a part of Ethnomusicology, which focusses on the role of music within a society (Both 2009, 4). More specifically, Ethnomusicology is the study of music made by people for themselves, their gods, and/or other people (Olsen 1998, 4).

2.1 Archaeomusicology

In the broadest sense, Archaeomusicology can be described as the study of past musical behaviors and sounds (Both 2009, 1). Embedded in the name are the two disciplines that can be used to study these phenomena: archaeology and musicology. In this cross-disciplinary discipline, archaeology is studied through music, and music is studied through archaeology (Olsen 1998, 7). In this field of study it is difficult, or even impossible to answer certain questions about past music with certainty. This is due to the fact that no emic (insider) evaluation can be made. Because of this, studies about ancient music will always remain one of speculation and might only raise more questions than the answers they provide (Olsen 1998, 7). Therefore, certain other disciplines should also be used to be able to provide substantial answers to the proposed research questions.

2.2 Music iconography

The most important ways to research past musical behaviors and sounds is through the research of music-related finds such as “sound artefacts”, depictions of instrumentalists, and depictions and descriptions of instrumentalists, instruments and sound in colonial sources (Both 2009, 1). This brings us to the discipline of Music iconography.

Iconography is the study of the meaning behind certain depictions in art (Panofsky 1972, 3). Therefore, music iconography is the study of the meaning behind musical instruments and performances depicted in pottery, wood, or any other medium. In this case, the media on which these depictions are present consist of archaeological artefacts, making music iconography a branch of Archaeomusicology (Olsen 1998, 6). Music iconography is thus the description of music through its representation in sculpture, painting and other plastic arts (Olsen 1998, 7).

As is the case with the Aztecs, pre-encounter musical iconography tells us about the uses of music in the Aztec culture. Early post-Encounter musical iconography derived from codices (pictographic manuscripts) and other writings by for instance chroniclers and missionaries are important due to their visual commentaries about the use and function of music in the Aztec culture (Olsen 1998, 12).

Music iconography can reveal information about musical contexts, but it cannot tell us many details about techniques of playing (Olsen 1998, 13). For instance, a depiction of a person playing a flute shows that the person is playing with his fingers, but we cannot tell which parts of the fingers. Music iconography can also suggest the social status of certain depicted musicians. For instance, if a depicted musician seems to be wearing elaborate clothing and headdresses, it may be suggested that it is a person of importance, like a priest. If a musician is depicted without any elaborate clothing and headdresses, it may be suggested that it is a person of little importance and might be a commoner (Olsen 1998, 13). So, in a broad sense, Music iconology can provide suggestions about how musical instruments might have been played, and what sort of people played these instruments (Olsen 1998, 13).

For this thesis, Music Iconology will thus be used in order to analyze depictions of the Flower-flute in order to place it in its cultural and social context. More specifically, depictions from the codex Florentinus by Fray Bernadino de Sahagún and depictions on the instrument itself shall be analyzed in this thesis.

In order to study the sound artefact itself, the disciplines of organology, experimental archaeology, and music theory come to mind.

2.3 Organology

Where Musicology is defined as the study of music, Organology is the study of the instruments used to produce this music (Tresch and Dolan 2013, 278). Organology thus focusses exclusively on the scientific and engineering aspects of the musical instrument (Oler 1970, 171). For this thesis, the discipline of organology will thus be used in order to give a detailed description of the studied musical instrument. In this thesis, the work of Arnd Adje Both (2002) on the organology of the Flower-flute will be analyzed, as it provides a detailed description of the technical aspects of the instrument.

2.4 Experimental archaeology

Experimental archaeology is one of the most important disciplines when researching music instruments when a sound artefact (or replica) is present and can be studied by actually interacting with the instrument in a way that it was in the past (Both 2009, 7). When practicing experimental archaeology on a musical instrument, the researcher interacts with the sound-artefact while trying to imitate the use of this artefact as it would have been used by a person contemporary to the artefact. This process is called imitative experimentation. In doing so, the researcher can make an archaeological interpretation using its own experience (Ascher 1961, 793-795).

In this thesis, the results from the imitative experimentation on the Flower-flute from Arnd Adje Both (2002) will be analyzed, because Both has experimented with this instrument in a thorough manner, providing a solid basis for further analysis.

In this case, the experimental archaeology shall thus not be done by me, but rather the results from Both (2002) will be analyzed. Together with professor of music Oscar van Dillen, the imitative process of Both and the description of the organology of the instrument shall be analyzed in order to provide a conclusion about the technical aspects of the instrument. After this, a good basis for interpretation about the basic produced tone range, possible playing styles, and general technical functions is present.

2.5 Music theory

In order to be able to try and get an approximation of the possible sounds, melodies, and “songs” that were played by the Aztecs on this instrument, it is important to acquire a basic understanding of what tones are, and how these tones can work together to create pleasant and natural sounds.

First we will look at the basic tones that are present in music. All around the world, music is mostly divided into 7 basic tones (www.oscarvandillen.com). In the medieval system of tones, the basic tones were called: ut (do), re, mi, fa, sol, la, si. In the newer system the basic tones have been given an alphabetical notation which is: C, D, E, F, G, A, B. These two systems are essentially the same, but are just notated in a different way; do is C, re is D, mi is E, and so forth.

In addition to these simple letters, tones can also be raised or lowered by a semitone with the help of certain notation signs, called the accidentals. These accidentals are either flat or sharp, and are notated as a # for a raised sharp tone, and a \flat for a lowered flat tone. The distances between E and F as well as between B and C are themselves already a semitone, so there are 5 open semitones in this set of basic tones. Finally this gives us 7 basic tones with 5 possible pitches in between (chromatic tones), giving us 12 pitches to work with (www.oscarvandillen.com).

In order to give these tones a proper sound, they should be played together in tune, in harmony. A harmony is a combination of tones which sound natural and pleasant when these tones are played together in time.

One of the most important aspects of musical harmony is the scale. A scale is a set of 5 or more tones that arranges the tones in a stepwise order. The most common steps in these scales are either, $\frac{1}{2}$ step (semitone), a 1 step (whole tone), or a $1\frac{1}{2}$ step (minor third).

A very old and common scale is the Pentatonic scale, which is used as a Major pentatonic scale and a Minor pentatonic scale. The major pentatonic scale has 5 tones, which would be C-D-E-G-A if you would start on the C-tone. The structure of the steps in the major pentatonic scale is 1-1-1½-1-1½. When we apply this to the normal follow up of tones this stepwise approach becomes clear:

C-C#-D-D#-E-F-F#-G-G#-A-A#-B-C

or descending: **C-B-Bb-A-Ab-G-Gb-F-E-Eb-D-Db-C**

The minor pentatonic scale follows another structure of steps, which is 1½-1-1-1½-1, and is derived from the major pentatonic scale starting on A: A-C-D-E-G-A, so if you would start this from the C upwards, this would then give us: C-Eb-F-G-Bb-C (www.oscarvandillen.com).

There are a lot more scales (hundreds in fact) but the pentatonic is by far the oldest (For instance, the Divje Babe flute of circa 40,000 years old is pentatonic) and by far the most common to many musical traditions, and therefore likely to also be the most relevant scale to this research (van Dillen 2015, personal communication).

2.6 Ethnomusicology and Critical reading of Colonial sources

In order to analyze the cultural context in which the instrument was used, the study of Ethnomusicology will have to be used. Ethnomusicology is an important discipline in this part of the research, since it focusses on the role of music within a society (Both 2009, 4).

To analyze the cultural context of the Flower-flute, colonial sources shall be used, thus relying on Musical Historiography. Musical historiography is information about music that has been written by chroniclers of a culture contemporary of their own. These writings are either emic (insider), such as the Aztec writing about the Aztec, or etic (outsider), such as the accounts of the Spanish chroniclers who wrote about the music of other cultures (Olsen 1998, 21). An important aspect of Historiography is the study of Philology, in which descriptions about musical instruments, practices, and language are given (Olsen 1998, 22).

As will become clear, this instrument was used, and had a prominent role, in one of the largest annual festival the Aztecs held, the Toxcatl festival. In order to study the exact role of the instrument, and its use and function in this festival, a combination of the disciplines of Ethnomusicology, Musical Historiography, and philology will have to be used in a sense that the descriptions from the Spanish missionaries in the colonial sources will be studied. In the case of this thesis, the etic writings of Spanish missionary Fray Bernadino de Sahagún play a big part.

When studying these colonial sources, it is important to realize that the accounts of the Spanish chroniclers could be biased (Olsen 1998, 21). Especially in the case of Mesoamerica, whose cultures were highly symbolical and metaphorical and possessed a dominant role of religion in their cultures (Jansen 2006, 242,243). Since historiographical sources mainly consist of ethnographies and descriptions from traveling missionaries, these sources can be difficult to use: Some are objective, some are subjective, and some may contain misinformation due to biases or carelessness (Olsen 1998, 22). Because of this, descriptions and depictions on carved stones, figurative ceramic vessels, and particularly codices may be read as statements and narratives when this was not the intention of the writers themselves (Jansen, 242). For instance, interpretations that have been made about the meaning of certain indigenous words, descriptions and representations can vary a lot (Olsen 1998, 7). Where one might interpret something as very dark, negative, or brutal, the other might interpreted it as positive, kind, or brave (Jansen 2006, 245,246). Because of this it is very important to fully understand these ancient languages and their worldview in order to be able to make statements about these past cultures (Jansen 2006, 242). These sources should thus be carefully analyzed and compared with other types of information (Olsen 1998, 22).

With this in mind, it is still useful to use the descriptions from these sources, and mainly the source of the Codex Florentinus from Fray Bernadino de Sahagún who describes the Toxcatl festival in a detailed manner.

3. The Aztecs

When the Spaniards arrived at Tenochtitlan in 1519 they expected to find a simple, backward people, and not a fully developed culture (Smith 2012, 1). Spanish conquistador Hernando Cortes led a campaign into Mesoamerica in order to eventually capture and destroy the Aztec capital. Once Hernando Cortes his army approached the capital of the Aztecs, called Tenochtitlan, it soon became clear that they had been very wrong (Smith 2012, 1). Bernal Díaz del Castillo, a soldier in Hernando Cortes his army expresses his amazement of this city in his book “The conquest of New Spain”:

“It was all so wonderful that I do not know how to describe this first glimpse of things never heard of, seen or dreamed of before[...]But today all that I then saw is overthrown and destroyed; nothing is left standing.” (Bernal Díaz del Castillo 1963, 214-215)

The Spaniards could not be less than amazed by the civilized nature of the Aztec society, their kings and queens and their wealth, their scientific and technical knowledge, and many more aspects of the Aztec society that showed that they were dealing with all but an underdeveloped society (Smith 2012, 1).

3.1 History

In order to understand the Aztec culture it is important to know the history of how this culture came to be and how it grew into the largest empire Mesoamerica has ever seen (Smith 2012, 50).

Before the Aztecs emerged in the Central Mexican region (Fig. 1), there had been some predecessors that allowed this once great empire to flourish.

It all began with small bands of hunters and gatherers that flourished at the end of the Pleistocene ice age (Smith 2012, 31). These hunters and gatherers eventually domesticated Maize and other crops between 5000 and 7000 BC, which eventually became the main form of subsistence around 2000 BC.

Until around 100 BC, central Mexico consisted mainly of small villages, towns and chiefdoms, after which the first states emerged in 100 BC. One of these states was Teotihuacan, which soon grew into the largest urban centre in Mesoamerica, ushering in the Classic period (AD 150-700). After Teotihuacan was burned, a time of decentralized city states began, called the Epiclassic period (AD 700-900). In the Early Postclassic period (AD 900-1150), the Toltec culture flourished (Smith 2012, 31), a culture of which it is suggested that many of the cultural patterns of Aztec life emerged from (Townsend 1992, 44).

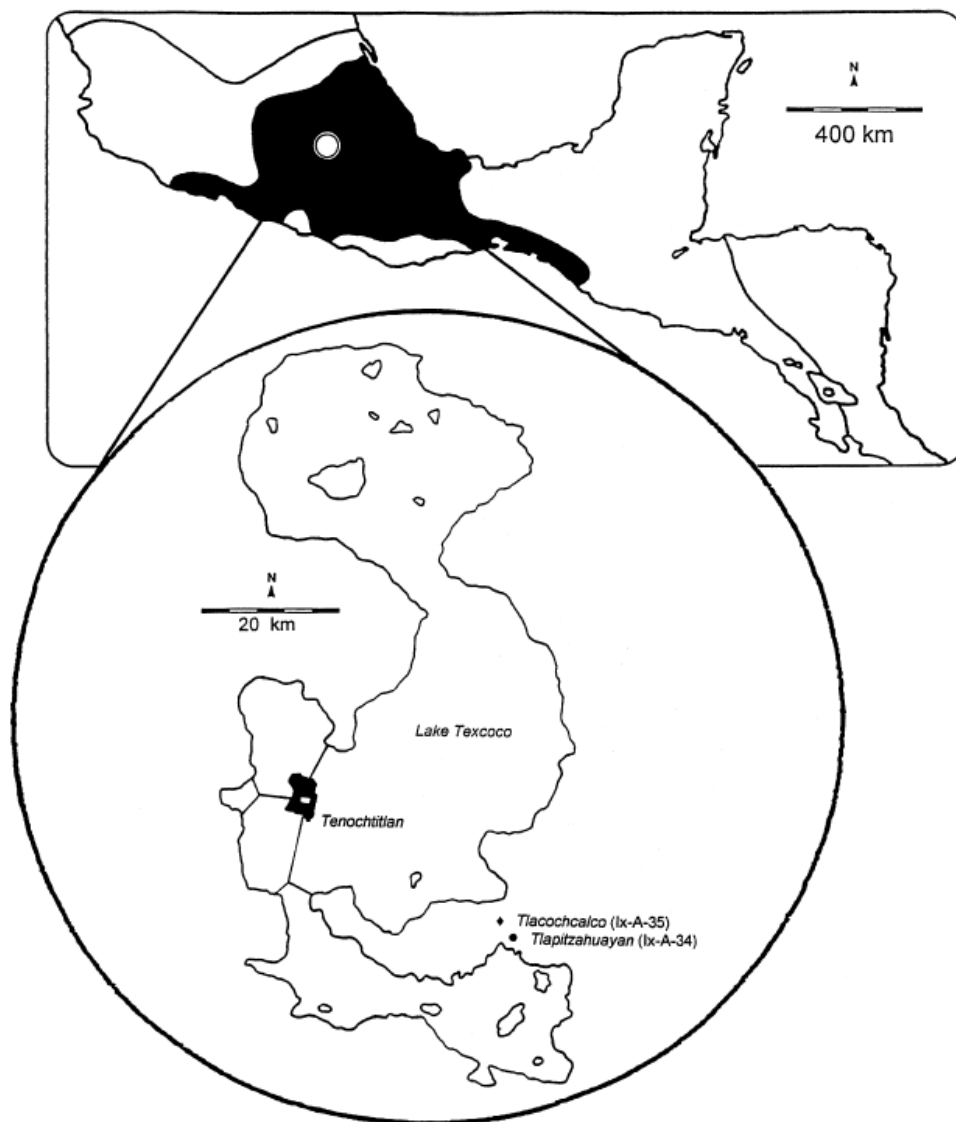


Figure 1. *The Aztec territory in Mesoamerica and the valley of Mexico in 1520 AD (Both 2002, 283).*

The arrival of the Nahuatl speaking people at the start of the Middle Postclassic period, or “Early Aztec phase” (AD 1100-1300), ushers in the time of the Aztecs, in which most Aztec towns, cities, and dynasties were first established (Smith 2012, 40). Afterwards, in the Late Postclassic period, or the Late Aztec Period (AD 1300-1520), the capital city of Tenochtitlan grew exponentially (Smith 2012, 48). The Aztecs of Tenochtitlan were not the only ones to inhabit these lands. Several different cultures existed here, and one of them, the Teponacs tried to exert control over Tenochtitlan and its neighbouring capitals of Texcoco and Tlacopan (Townsend 1992, 66). In order to stop this dominating power, the Triple Alliance was formed. Tenochtitlan allied with the neighbouring cities of Texcoco and Tlacopan, whose alliance eventually defeated the Teponacs. After this victory, lands were divided among the victors, and the Triple Alliance kept stance, allowing for the Triple Alliance to rule the largest empire ever in ancient Mesoamerica (Townsend 1992, 66-72).

From 1428 till 1519 AD, the Triple Alliance Empire represented the pinnacle of cultural development in ancient Mesoamerica in which there was peace and order in Mexico, a prosperous economy existed, and arts and religion were widely practiced. However, the vast greatness of the empire also meant that 3 million people had to be fed which eventually led to a large differentiation between the nobles and the commoners (Smith 2012, 281).

In 1519 the Spanish conquistador Hernando Cortés arrived on the Mexican coast along with his army of 500 men (Smith 2012, 282,283). Driven by stories of gold and great wealth, Cortés set out for the Aztec capital of Tenochtitlan. Along the way to Tenochtitlan, Cortés encountered the Totonacs and the Tlaxcallans, who were two different native cultures inhabiting these lands under control of the Aztecs. Tired of the Aztec domination, Cortes eventually allied with these natives by promising them to free them from the Aztec domination (Smith 2012, 184). Because Cortes had found these allies, he eventually obtained an army of tens of thousands of natives (Smith 2012, 287).

Due to the Aztec ruler Motecuhzoma his restraint in fighting against the Spanish invaders, and rather showering them with gifts, the Spaniards eventually reached Tenochtitlan. The Spaniards were first invited as guests but it soon became apparent that the Spaniards their only goal was to conquer and not to befriend. Eventually Motecuhzoma was killed where after his brother followed him up.

In the following months the Spaniards laid siege to Tenochtitlan together with 70.000 Tlaxcallans, fighting their way to both sides of the city and cutting off their supplies. In the end it was probably not just a superior army and weapons, but rather a disease that meant the end of the once great capital (Smith 2012, 284-288). The defeat of Tenochtitlan was remembered by an Aztec poet by the following translated Nahuatl quote:

*"Broken spears lie in the roads;
We have torn our hair in grief.
The houses are roofless now, and their walls
Are red with blood.*

*Worms are swarming in the streets and plazas,
And the walls are spattered with gore.
The water has turned red, as if it were dyed,
And when we drink of it,
It has the taste of brine.*

*We have pounded our hands in despair
Against the adobe walls,
For our inheritance, our city, is lost and dead.
The shields of our warriors were its defence,
But they could not save it..."* (Unknown Aztec poet, in León-Portilla 1962, 137-138).

3.2 Society

To understand the Aztec culture and the social position of the people in this culture, a basic understanding of the social differentiation and the Aztec way of life in this society is needed.

Nobles or lords were at the top of the Aztec hierarchy, which brought them the responsibility to run the government, own the land and command the armies. This in turn allowed them to live a more luxurious lifestyle than the commoners (Smith 2012, 127). The common people were obliged to provide their lords with food and other goods in such a quantity that they were still able to provide for themselves and even maintain some economic comfort (Smith 2012, 128).

Where boys were expected to become warriors, girls were expected to become managers of the household when they grew up. Between the age of 10 and 20, all boys and girls attended school, in which they received training in singing, dancing, and musical instruments, mostly used in rituals (Smith 2012, 130). In their adult life, the men were expected to marry around the age of twenty, where girls would often marry around the age of 10 or 12 (Smith 2012, 131). The men would mainly work outside their homes. Many men were farmers in the agricultural season, and during the rest of the year they were warriors or labourers. Women spent most of their time in their homes doing household work like cooking, looking over the children, and weaving (Smith 2012, 133).

The Aztec economy relied mostly on markets and merchants (Smith 2012, 108), with marketplaces in almost all Aztec settlements that would be visited heavily each week on market day (Smith 2012, 9). Money in the form of coins was not present in the Aztec culture, but they rather traded in the form of cacao beans and cotton textiles (Smith 2012, 117,119).

Music played an important role in the Aztec society and was a great part of the Aztec way of life. This is evident in the existence of the *telpochcalli* (school for common Aztec children) and *calmecac* (school for noble Aztec children), who both took great care in instructing the children about music, song, and dance (Townsend 1992, 162).

4. Aztec music

In the Aztec culture, music was seen as a holy art, performed mainly at rituals and ceremonies (Smith 2012, 274). Fortunately, many of the music instruments used in these rituals and ceremonies have been preserved (Smith 2012, 274), giving us the possibility to try and understand more of the role of music in the Aztec culture.

The most important music instruments and their use and function will be discussed in this chapter.

4.1 Aztec music instruments

According to the classification of Hornbostel and Sachs (1961), there are four different categories of musical instruments: the idiophones, the membranophones, the aerophones, and the chordophones. The Aztec musical instruments fall into three of these categories, which are: the idiophones, membranophones, and the aerophones (Both 2007, 91). There is no known evidence of chordophones (stringed instruments) among the Aztec musical instruments in Precortesian times (Stevenson 1968, 22).

The first category is of the idiophones, in which the substance of the instrument emits sounds due to its solidity and elasticity, like a xylophone (Hornbostel and Sachs 1961, 14). The second category is that of the membranophones, in which the instrument produces a sound due to a tightly stretched membrane, like a drum (Hornbostel and Sachs 1961, 17). The final category is that of the aerophones, which are instruments in which vibrating air inside the instrument is used to emit sounds, like a flute (Hornbostel and Sachs 1961, 24).

According to Both (2007), this classification of instruments is probably not how the Aztecs themselves would have categorised them. Both suggests that there is evidence that these instruments were classified by ascribing a certain symbolism to the material, the sound, and the mythological meaning of the instrument. For instance, where drum and metallic sounds symbolised royal power and were associated with fire and the sun, the sounds of a shell trumped symbolised a creative power which was associated with the aquatic underworld and the moon (Both 2007, 94).

4.1.1 Variety of Aztec instruments

In order to understand the role of music in the Aztec culture, it is important to possess a basic knowledge of what kind of Aztec musical instruments were present in these categories. For a more thorough description of all different Aztec musical instruments, see the work of Sander Macquoy (2014), who has already described all known Aztec instruments in his thesis.

Among the Aztec idiophones were rattles made from dried seed pods (*yoyotli*), rattles made from ceramic (*Cacalachtli*), bone rasps (*Omichicahuaztli*), turtle shells who were beaten with deer antlers (*Ayotl*) (Fig. 2), and many more different kinds of idiophones (Both 2007, 92; see Macquoy 2014, 38-45). The most important idiophone, and also one of the most important Aztec musical instruments in general, is the *teponaztli* (Fig. 3). The *teponaztli* was a sculptured slit drum made from hardwoods (Both 2007, 92), which was made from a small hollowed out trunk of a tree (Chamorro 1998, 557). The *teponaztli* was beaten with two gum resin covered wooden mallets called *olmaitl* ("Rubber hands") (Both 2007, 93) and could produce two different pitches (Stevenson 1968, 62). In order to provide the instrument with a better resonance, the *teponaztli* was rested on a ring called *icpalli* ("throne") during temple rituals, and on an X-shaped wooden stand during ceremonial dances (Both 2007, 93). For the use in processions, small sized *teponaztli* called *teponaztonli* were used. These small slit-drums were carried with a strap and were provided with a hanging gourd in order to provide a better resonance (Both 2007, 93).

The most important Aztec membranophone was the *huehuetl* (Fig. 2), and was also one of the most important musical instruments in the Aztec culture (Stevenson 1968, 41). The *huehuetl* was a cylindrical wooden drum made from a hollowed out log (Chamorra 1998, 557) that rested on three wooden legs (Stevenson 1968, 41). The top of the *huehuetl* was stretched with an animal hide, and the bottom was left open, which allowed this instrument to produce two well defined tones.

Figure 2. Musicians playing the *Ayotl* and *Huehuetl* in the *Codex Magliabechiano* (after www.famsi.org, accessed on 14-6-2015).



Where Aztec musicians played the *teponaztli* by using wooden mallets, the *huehuetl* was played by using the fingers and the palms of their hands (Stevenson 1968, 41). The significance of this instrument can be seen in the fact that many found *huehuetl* show elaborate carvings of the Aztec music gods *Macuilxochitl* (5-flower) and *Xochipilli* (Prince of the flowers) (Both 2007, 93). Some variations of the *huehuetl* existed in the Aztec culture, like ceramic drums (See Macquoy 2014, 46-47).

Among the Aztec aerophones there are marine shell trumpets (*Tecciztli*, *quiquiztli*), bone flutes (*Topitz*), reed flutes (*Acapitzli*), and many more different types of trumpets and flutes (See Macquoy 2014, 34-37). One of the most common Aztec musical instruments was the *tlapitzalli* (Smith 2012, 274). *Tlapitzalli* were ceramic tubular duct flutes with four finger holes (Both 2007, 93). Different varieties of the *tlapitzalli* existed, but one of the most common were ceramic flutes that ended in bells that flare (smith 2012, 274). This might suggest a representation of a flower opening at the end of a stalk (Stevenson 1968, 81), hence the name many of these flutes acquired, “Flower-flute” (Smith 2012, 274). This instrument is central to this thesis and shall be further examined in chapter 5.

4.2 Music in the Aztec society

To understand the use of music in the Aztec culture, the social context in which this music was practiced should become clear.

Due to the fact that most ethnohistorical information about music focusses on its role in public ceremonies and that most preserved instruments have been found in temple offerings, it could be suggested that music was only used in public, temple, and court ceremonies. On the contrary, numerous music instrument fragments have also been found in domestic trash deposits, which may suggest that these instruments may have also been used in domestic rituals (Smith 2012, 274). The fact that these instruments have also been found in domestic trash deposits, together with the fact that the playing of musical instruments was also taught to children in their schools (See Chapter 3.2), might suggest that not only children practiced music in school but that they perhaps also practiced with their musical instruments at home. Overall, Aztec music is strongly linked to ceremonial or ritual occasions, where it was mainly used to accompany dances (Sheehy 1998, 549).

As the children approached adulthood and marriage, the role of music, dance, and ritual performance became increasingly important because from this time they were expected to participate in public ceremonies and rituals (Townsend 1992, 164).

Although the function of Aztec music was mainly religious, where it was used in religious chants, it was also used in different contexts, like war, folk music, civic festivals, hunting, and imitative music (like imitations of birds) (Kurath and Martí, 1964, 177). Due to the highly religious and symbolic nature of the Aztec society (Jansen 2006, 242-243), it could be suggested that even with these other contexts there was also a religious idea embedded in the music.

4.2.1 The Aztec musicians

Looking at the language of the Aztecs, some remarkable aspects about how they referred to their musicians and dancers come to light. There was no term for “music” or “musician”, but translated from Nahuatl, all musicians were called “singers” (Both 2007, 94). For instance, a slit-drum player was a “singer of the slit-drum”, meaning he did not play but rather sang on his instrument (Both 2007, 94). Similarly, the Aztecs did not have a name for dancing, which translates from Nahuatl to “to sing with the feet” (Stanford 1966, 103).

The musicians, or “singers” that played this music were usually groups of priests or old men who were trained as composers and performers (Kurath and Martí 1964, 84). During sacrifices and other solemn acts, the priests usually played trumpets, flutes, and the *huehuetl* (Fig.3). For processions, the *teponaztli* was played by priests and old men. For round dancing events, they played the *huehuetl* (Kurath and Martí 1964, 84).



Figure 3. Aztec Musicians playing the Huehuetl, Teponaztli, and gourd rattles in the *Codex Florentinus* (After www.wdl.org, accessed on 14-6-2015).

The highly ritual and religious aspect of the many forms of music could be a reason why many musical instruments were mainly played by priests, especially during important religious activities.

During the Late Postclassic period of Mesoamerica, sources from the early colonial period suggest a differentiation between temple music, practiced by specialized priests, and court music that was practiced by professional musicians (Both 2007, 91).

Court musicians played at the daily banquets and other meetings in and around the palace for the entertainment of the ruler, or at private feasts of wealthy merchants (Sahagun 1950-82, Book 4-5, 123). For these performances, the musicians received gifts (Sahagun 1950-82, Book 4-5, 26). Since they were honoured for their duties as “singers” and received tribute, It may be suggested that they represented a group similar to the artisans (Both 2007, 99).

Temple musicians played an important part in many rituals that were held in the temple district. Among the temple musicians were priests, dancers, deity impersonators, and other individuals that played a part in the many Aztec rituals (Both 2007, 96), bringing us to the religious significance of Aztec music.

4.2.2 Religious significance of the Aztec music

In the temple district, music played an important role in many rituals. Music instruments were played by different groups of priestly musicians, dancers and the representatives of deities (Both 2007, 96). An example of the musical significance in a ritual is seen in a ritual dedicated to the goddess of agriculture, *Xilonen*, which has been described by Sahagún (Sahagún 1950-82, Book 2, 99). Sahagún describes how a priest plays a rattle stick (*chicahuaztli*) during this ritual while an impersonator of the deity *Xilonen* is supposedly sacrificed. In another description by Sahagún (Sahagún 1997, 57), it becomes clear that not only priests played the instruments during certain rituals. Sahagún describes a ritual called “the sowing of the rattles”, during which everyone, noblemen and commoners, danced with their rattles. Another description of Sahagún (Sahagún 1997, 80) is about a rite called “The sounding of the trumpets” in which conch shell trumpets were blown at midnight after which the drums would be beaten. According to Both (2007) this rite initiated nightly sacrifices, and the drums used during this ritual were large wooden drums (Both 2007, 96), but this is not to be read in Sahagún (1997) his writing. Finally, during a festival called *Toxcatl*, the ceramic Flower-flute of the *tlapitzalli* category plays a central role, but more on this in chapter 6.

4.2.3 Religious significance of Aztec musical instruments

The ritual significance of musical instruments can be seen in the Aztec or Nahuatl terminology. For instance, the blue-painted rattle stick of the rain priests could be literally translated to “instrument to strengthen the fog” (*ayaauhchicahuaztli*) (Both 2007, 95). This instrument was used to bring rain from the domain of the rain god *Tlaloc* (Sahagún 1950-82, book 2, 208).

Other instruments that show the religious significance of Aztec music, are musical instruments that obtained a symbolic meaning because of the sounds they produced. For instance, instruments like the bone rasp, gourd rattle, and rattle stick, made a rattling or clattering sound, which suggest a relation to the rain or rattle snakes, which in turn are symbolizing the Aztec deities of rain and wind (Both 2007, 95). Also, the sound from the shell trumpet was perceived as the sound of the primordial blast from the underworld by *Quetzalcoatl* that the Aztecs believe created the world (Both 2007, 95). The sound of tubular duct flutes was related to the deity *Tezcatlipoca*, and birdcalls were imitated on whistles as manifestations of *Xochipilli* and other deities.

These associations can also be seen on artefacts with symbolic decoration, assigning specific sounds to certain cult complexes (Both 2007, 96). Some instruments were used as a means to communicate with the spiritual realm, in which the instrumentalist acted as a medium through whom the gods sang (Both 2007, 95). During certain processions and dances it was common to use gourds as a symbol of female fertility, and rattle sticks as a male symbol for rain (Kurath and Martí 1964, 84).

5. The Flower-flute

Having obtained a basic understanding of the Aztec culture, their music, and their musical instruments, this thesis will now shift to the main object of this research, the Flower-flute.

Among the Aztec music instruments, the vertical flute and its relatives possessed a central position in the Aztec world of music instruments (Stevenson 1968, 80). From the many found Aztec flutes, all of them contain four finger holes, at least to judge from all the examples in *instrumentos musicales precortesianos* (Martí 1968, 75, 83, 85, 89), in which Samuel Martí examined all the instruments from precortesian times (Martí 1968).

Characteristic of the Aztec flutes was that they were an end-blown flute, with a whistle mouthpiece through as much as a third of the whole length of the flute. Another characteristic of Aztec flutes is that the endings of the flute end in an abrupt wide opening manner as to represent the opening of a flower (Stevenson 1968, 81). This was also the case with the Flower-flute, belonging to the category of the “*tlapitzalli*” (See Chapter 4.1.1).

5.1 The object itself

The Flower-flutes that will be studied in this thesis are several Flower-flutes that have been preserved and are present in the museum collection of the Ethnologisches Museum Berlin (Fig. 4). The flutes present in this museum are dated back to between 1350 and 1521 AD, and are called flower-flutes due to their flower like opening at the end of the flute, and their cultural context (Both 2002, 279). These Flower-flutes have been thoroughly researched by Dr. Arnd Adje Both (2002), whose research adds a great deal to understanding these musical instruments.

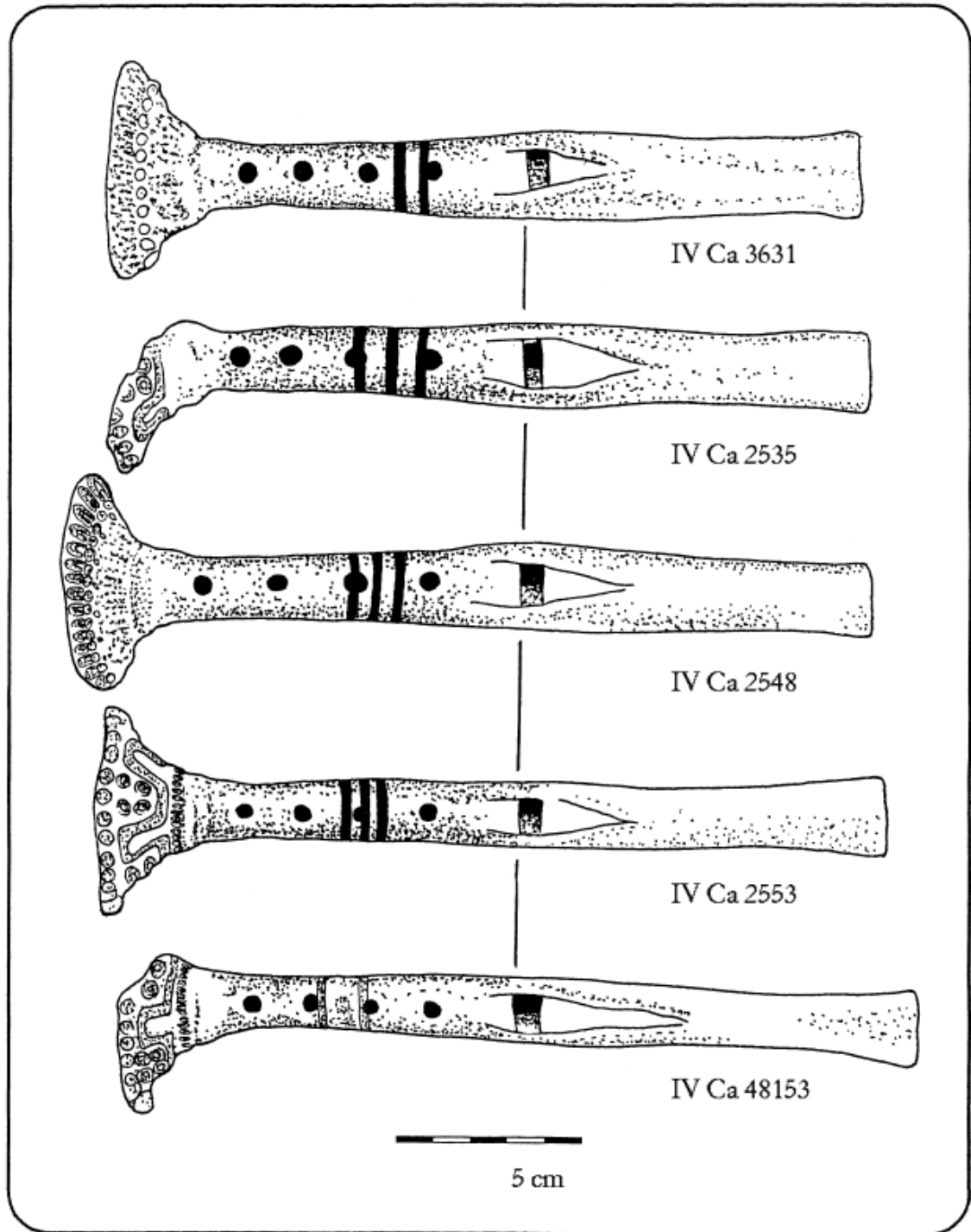


Figure 4. Aztec flower flutes from the Valley of Mexico (1350-1521 AD). *Ethnologisches Museum Berlin, SMB PK, Drawing: C. Koch (Both 2002, 284).*

As described by Both (2002, 279), these Flower-flutes are characterized by a long duct, a framed aperture, a tube with four finger holes, and a bell in the shape of a blossoming flower which has a relief structure of petals and abstract signs. The flutes are between 18 and 23 centimetres in length and weigh 45 to 75 grams. They are made from ochre or greyish clays which had been polished and sometimes painted before baking. The most common colours seem to be a dark reddish brown. A notable aspect of all the flutes is the fact that there are two or three red stripes painted around the tube that are always positioned between the first and the third finger hole. Both (2002) claims that the red stripes on the flute may be an indication for the best position of the thumb if it is to be held with one hand. Professor of Music Oscar van Dillen refutes this statement because at some flutes this does not seem to be that case (for instance flute Ca 48153) (Fig. 4). Furthermore, van Dillen claims that the positioning of the thumb should not be any problem for a musician who has played the flute more than once. Even if someone would have never played a flute in his life, the normal reaction of the hand would be to position the thumb in the best possible way for that person its hand. Furthermore, van Dillen claims that these red stripes can also be observed in many reed flutes from all over the world; these stripes are actually produced by reinforcing bands to improve the sturdiness of the flute, if made from reed or bamboo (van Dillen 2015, personal communication). Therefore, it might be suggested that these red stripes did not indicate the best position for the thumb, but that they rather possessed a symbolical meaning. Due to the fact that these fortifications were present in older flutes used by their ancestors, it might be suggested that the symbolical meaning of these stripes held a relation to ancestor veneration.

A particular flute from Berlin museum of Ethnology deserves a closer look due to the fact that it has been preserved in a perfect condition, this flute is called flute Ca 3631 in the Ethnologisches Museum Berlin collection (Fig. 5, 6):



Can not be published

Figure 5. *Image of flute CA 3631* (Courtesy of Ethnologisches Museum Berlin 2015).



Can not be published

Figure 6. *Image of Flute CA 3631* (Courtesy of Ethnologisches Museum Berlin 2015).

The flute is 19,5 cm in length (www.smb-digital.de) and appears to be painted in a red/brownish color. There appear to be two red stripes painted which are positioned between the 1st and 2nd hole, with one of the stripes painted over the 1st hole. The shape of the flute is very varied along the length. At the beginning of the flute it has a very flat and narrow shape, where it becomes more round towards the middle of the flute. After the middle it becomes round, after which it ends in a flower like wide opening. In total there are 5 holes in the flute. The first hole is positioned in the middle and the other 4 are positioned from the middle to the end of the flute. The first hole seems to be carved out in a V-shaped way. There seem to be some decorations on the ending of the flute that consist of circles, stripes, and balls.

The color of the flute is not certain since many of the colors may have been removed due to weathering. The two red stripes are still very clear and might have been an indication for the best position of the thumbs when holding the flute (Both 2002, 279) or may be a remnant of the older reed flutes (Van Dillen, personal communication). The function of the first hole that is positioned in the middle of the flute is to divide the air in the flute (Van Dillen, personal communication). When blown in the beginning of the flute, the air then gets divided 50/50 by the middle hole. The other 4 holes are used to create different tones. The fingers of the musician are placed on one or more holes in order to change the vibrations inside the instrument that make up the produced tone. The flower-like ending of the flute probably had 2 functions. The first function would be to be able to direct the sounds over a wider area by making the ending very open and wide. The second function would be a symbolical and decorative function (Van Dillen 2015, personal communication).

5.2 The sound it produced

The studied flutes seemed to produce both extremely shrill, and very clear sounds (Both 2002, 279), just as it was described by Spanish missionary Fray Diego Durán (1984), who described it as “*un sonido muy agudo*” (Dúran 1984, 39), which translates to “a high-pitched sound”. In his research, Arnd Adje Both (2002) determined the total sounds capacities of the flutes by playing all 16 possible finger combinations with minimal and maximal air-pressure (Fig. 7a, b). For each finger combination, the lowest and highest playable tones were determined. By doing so, he found out that it is impossible to overblow, and that a single finger combination could fall into the range of 7 different tones just by blowing harder or softer (Both 2002, 280, 286).

Both (2002) claims that a problem arises with the fact that the playing techniques of the Aztecs are unknown. This makes musical reconstructions of the use of this instrument very hard and are thus mainly hypothetical (Both 2002, 280). Nevertheless, an attempt will be done to try and determine certain playing techniques of this instrument.

Looking at the graphs from Both (2002) his research (Fig. 7a, b), a few (hypothetical) conclusions can be drawn:

Firstly, due to the fact that there seem to be large pitch-deviations in the tone range of the flute, it can be suggested that an extremely precise intonation such as can be found in western Asian music traditions was not of the greatest importance when playing this flute. There also seem to be large deviations in the produced tones between the two studied flutes, which also supports this supposition that precise intonation was not of the utmost importance. Adding up these particular observations to a more general overview of surviving Mesoamerican musical traditions, it can be reasonably supposed that the rhythm of the music played on this instrument was likely to be much more important than the intonation of the melodies produced (Van Dillen 2015, personal communication). This statement can be supported by accounts from Friar Diego Durán who describes the great importance of rhythm and the differentiation in high and low tones which accompanied the many Aztec dances (Durán 1971, 295). And also by statements from for instance Daniel E. Sheehy (1998), who claims that most Aztec music is intended to accompany dance and which has a regular, marked, rhythmic pulse (Sheehy 1998, 549). Because of this, it may be suggested that although the Aztecs definitely took great care in tuning and optimizing their Flower-flutes (Kurath and Martí

1968, 174), it was more important to them that different distinguishable tones were present to accompany the other instruments for dances, than it was important for these flutes to sound perfectly clear without any impurities.

IV Ca 2535

tablature fingerholes				C 1	C#	D	D#	E	F	F#	G	G#	A	A#	B	C 2	C#	D	D#	E
1	2	3	4	0 Cent	100 Cent	200 Cent	300 Cent	400 Cent	500 Cent	600 Cent	700 Cent	800 Cent	900 Cent	1000 Cent	1100 Cent	1200 Cent	1300 Cent	1400 Cent	1500 Cent	1600 Cent
O	O	O	O														-40		0	
O	O	O	I													-30		+40		
O	O	I	O													-30		-20		
O	I	O	O												-35		0			
O	O	I	I												-35		-10			
O	I	O	I										+10			+30				
I	O	O	O										+10		+40					
I	O	O	I										-10		+25					
O	I	I	O										-10		0					
I	O	I	O										-20		-5					
I	O	I	I									-20		+15						
O	I	I	I									-20	+40							
I	I	O	O							-20		+50								
I	I	O	I						-25			+15								
I	I	I	O					-20			+45									
I	I	I	I			+20			-15											

Figure 7a. Pitch-deviation per finger combination of flute IV CA 2535 in cent (A=440Hz).

IV Ca 3631

tablature fingerholes				C 1	C#	D	D#	E	F	F#	G	G#	A	A#	B	C 2	C#	D	D#	E
1	2	3	4	0 Cent	100 Cent	200 Cent	300 Cent	400 Cent	500 Cent	600 Cent	700 Cent	800 Cent	900 Cent	1000 Cent	1100 Cent	1200 Cent	1300 Cent	1400 Cent	1500 Cent	1600 Cent
O	O	O	O												+40				+30	
O	O	O	I												-20				-10	
O	O	I	O												-20			+45		
O	I	O	O									+10						-45		
O	O	I	I									+10					+30			
O	I	O	I								+20						0			
I	O	O	O								-40					+15				
I	O	O	I								-40					0				
O	I	I	O								-30				+20					
I	O	I	O						0						-30					
I	O	I	I						-20					+35						
O	I	I	I					0						-40						
I	I	O	O				+30							-40						
I	I	O	I			-10							0							
I	I	I	O			-30						+20								
I	I	I	I		+10					+10										

Figure 7b. Pitch-deviation per finger combination of flute IV CA 3631 in cent (A=440Hz).

O = fingerhole open, I = Fingerhole closed (Both 2002, 286).

Although a perfect intonation may have not been of the greatest importance, the Aztecs probably still needed some sort of standardized system on how to use the Flower-flute. When observing the graphs from Both (2002), another conclusion can be drawn. This conclusion is that the instrument was likely built to produce a major pentatonic scale (See chapter 2.2). It also seems to be musicologically obvious for the Aztecs to have used a Major pentatonic scale. This can be seen in the way the instrument would have sounded if playing it in the most logical way, both as to fingering as well as with regards to air pressure (Fig 7a,b). The most logical way to play the flute would be: all holes closed, then 1 hole open, then 2 holes open, and then 3 holes open. To play the flute with all 4 holes open would be impossible if the musician were in fact to hold the flute with one hand as the image by Both (2002) (Fig. 8), suggests (if it were merely supported from below by a thumb, it would fall out of his hand if he would not have his finger on any of the holes on top). The first 4 tones that are played with these finger combinations would provide a good sounding beginning of a western-like Major pentatonic scale, which is C-D-E-G, or 1-1-1½, referring to the distance between the played pitches (Van Dillen 2015, personal communication).



Figure 8. *Playing posture (Flute IV Ca 2553, Ethnologisches Museum Berlin, SMB PK)*
(Both 2002, 285).

This statement of the Aztecs using a scale like the pentatonic scale is also supported by other instruments used by the Aztecs. The fact that the Aztecs also used instruments like triple and quadruple flutes that could also produce two, three and four part chords suggests that the Aztecs had a profound knowledge of acoustics and the harmonic series and that they would have been acquainted with more than a primary five tone scale (Kurath and Martí 1964, 174). This is also supported by historical accounts that claim that the Aztecs tuned, modulated, and composed music in certain keys (Kurath and Martí 1964, 174).

Due to the observation of the most logical way to play, the sounds the instrument produced, and the fact that the Aztecs probably possessed at least a general knowledge of acoustics and harmonics, it can thus be suggested that it is plausible that the Aztecs played the Flower-flute by using a Major Pentatonic scale.

Related to the sound of the instrument is the statement that the sounds that the instrument produced were viewed as the voice of deity *Tezcatlipoca* (Smith 2007, 8). This brings us to the symbolism related to the flute.

5.3 Symbolism of the Flower-flute

Since symbolism was embedded deeply in the Aztec culture (Jansen 2006, 242,243), and especially in the Aztec arts (van Tuerenhout 2005, 253), it seems important to explore the symbolism related to the Flower-flute as well.

First off, the representation of the flower (*xochtitl*) represented in the bell of the flute is an important symbolic aspect of this instrument. According to Both (2002), flowers were associated with beauty, virtuosity and music, and even the offering of blood. The heart of the deity impersonator of *Tezcatlipoca* (see chapter 6.2) was compared to a flower, which was metaphorically plucked and supposedly offered in the ritual sacrifice (Both 2002, 281). Although, due to the metaphorical world of the Aztecs and different interpretations of certain readers (Jansen 2006, 242), this might have just been a metaphor for something else. Also, the impersonator of *Tezcatlipoca*, “plucked” the flutes before he was sacrificed, by breaking the flutes on the stairway of the temple and leaving them as undamaged as possible (more on this in chapter 6).

The symbolism present in the breaking of the flutes is clearly evident, and can be seen as some sort of transition to the spiritual realm (Both 2002, 281). This shows that the Flower-flute did not only had a highly symbolical meaning attached to the object itself, but also to what was done with the object.

The Aztec referred to music as a “flowery song” (Both 2002, 281), which ties the symbolism of the flowery shape of Flower-flute directly to the Aztec concept of music. Also, when playing the flute, a metaphorical link is drawn between the sound and scent of the blossoms, which are both seen as sacrificial gifts that function as a way to communicate with the spiritual realm (Both 2002, 281).

The ruler was compared to the flute through which the Aztec deity of the heavens and the earth, *Tezcatlipoca* (Sahagun 1950-82, Book 3, 11) could express its will (Both 2002, 281), on which shall be elaborated more in chapter 6. Nevertheless, the comparison of the ruler to the flute shows the important social function of the instrument, and shows that the sounds from this instrument was perceived as the proper voice, or “flowery song” of a deity (Both 2002, 281).

Important in Aztec symbolism and their worldview is the number “4” (*nahui*) and its multiples, who are a recurring number in the cult of *Tezcatlipoca* and the Toxcatl festival (Both 2002, 281). For instance the impersonator had eight guards, four wives, and four sacrificial priests. Furthermore, the Flower-flute had four fingerholes and a decorated piece at the end with a decoration with the sign *tonallo* consisting of four circles in a square placed between four abstract petals (Fig. 9). This *tonallo* was also represented on the throne of *Tezcatlipoca* and was associated with the deities of music and dance. Furthermore, these four flower petals seem to have a relation to the sign of *nahui ollin* (4-movement), which is related to the Aztec worldview of the four world ages, and that the world was divided into 4 cardinal directions (Both 2002, 281). This evident significance of the number 4 might support the previously supposed hypothesis by Oscar van Dillen that the Flower-flute was played in a Major pentatonic scale due to the fact that the 4 most logical finger combinations would provide this scale.

Whether any specific tones or melodies were related to the four quadrants of the world is a matter for further discussion (Both 2002, 281).

Sahagún frequently mentions the use of the Flower-flute by priests at ceremonies. Sahagún also mentions the person that impersonated the god *Tezcatlipoca*, played the Flower-flute while walking in perfect delight through the city.

This person was crowned with flowers, hung with golden bracelets, married to four beautiful maidens, and enjoyed every favour before his demise whilst walking up the stairs on a temple (More on this in chapter 6.2) (Stevenson 1968, 40).

To determine whether the Flower-flute played a significant role in a domestic context seems to be hard since this instrument was part of an important public ritual, and little has been documented in ethnohistorical sources about its possible use in domestic rituals (Smith 2007, 9). The main context in which the instrument has been found is in buried offerings to *Tezcatlipoca*, which suggests a strong link of this instrument to the cult of *Tezcatlipoca* (Smith 2007, 9).



Figure 9. *Bell of flute IV CA 2535 with the tonally sign on it*
(Courtesy of the Ethnologisches Museum Berlin).

6. The Toxcatl festival

As described in the previous chapter, the Flower-flute was highly related to the rituals accompanying the cult of *Tezcatlipoca*, and the annual festival of Toxcatl.

Descriptions of the Toxcatl festival mainly come from the Spanish missionary Fray Bernadino de Sahagún (Sahagún 1950-82). Although not everything from this source should be taken literally (Jansen 2006, 242-243), a lot of information about the Toxcatl festival comes from this source. First, the descriptions of the Toxcatl festival from Bernadino de Sahagún will be stated, after which a critical assessment of these descriptions shall be done.

6.1 Descriptions of the Toxcatl festival from Sahagún

Each year in the fifth month, a festival in honour of the Aztec deities *Tezcatlipoca* and *Huitzilopochtli* was held, the Toxcatl festival. As described by Sahagún (1950-82, Book 1, 5), *Tezcatlipoca* translated to “Smoking Mirror” from the Nahuatl, and was considered a true god who was everywhere: in the land of the dead, the living, and in heaven. *Tezcatlipoca* brought discord among the people, which is why they also called him “the enemy on both sides”. *Tezcatlipoca* both created and destroyed, and sometimes he would bestow riches on the man, like wealth, valour, honour and nobility. As described by Sahagún (1950-82, Book 1, 1), *Huitzilopochtli* translated to “Hummingbird from the Left”, and was considered the highest of all gods who was extensively worshipped. *Huitzilopochtli* was the god of warfare for whom slaves and captives were offered up (Sahagun 1950-82, Book 1, 1). According to Sahagún, the first part of the festival was to be held in honour of *Tezcatlipoca* (Sahagun 1950-82, Book 2, 64-68), and the second part was to be devoted to *Huitzilopochtli* (Sahagun 1950-82, Book 2, 68-73).

The Toxcatl festival was held from May 4 till May 23 and was held at the height of the dry season (Smith 2012, 235), which is in accordance to the literal translation of Toxcatl, “dryness” (Townsend 1992, 212). During this time of year, due to the lack of rainfall, resources were at a low and everyone was anxiously awaiting rain so that they could plant new crops.

The festival of Toxcatl was thus held as an appeal to the gods *Tezcatlipoca* and *Huitzilopochtli* to ask for the start of the rainy season (Smith 2012, 235; Kurath and Martí 1964, 77).

Each year on the festival of Toxcatl, an impersonator for the deity of *Tezcatlipoca* was chosen (Sahagún 1950-82, Book 2, 64). This impersonator was called an *ixiptla* (Smith 2012, 235), and was chosen each year from the prisoners of the Aztecs. The one that was eventually chosen to impersonate *Tezcatlipoca* would have to be an individual who was smart, and without flaw and without (bodily) defects (Sahagún 1950-82, Book 2, 64-65). This impersonator would then be taught how to play the Flower-flute while holding his flowers and smoking his pipe (Sahagún 1950-82, Book 2, 65). Furthermore, the impersonator was taught how to talk graciously, converse well, and greet people in a correct manner if he would encounter anyone (Sahagún 1950-82, Book 2, 66).

The impersonator would then walk through the streets while playing the flute and carrying his flowers and pipe (Sahagún 1950-82, Book 2, 65). While walking through the streets, everyone would honour him, bow to him, and kiss the earth on which he walked, for he was perceived by the people as their lord, and was thus treated as such. Also the king acknowledged this representation of *Tezcatlipoca* by repeatedly adorning him with various garbs, jewels and flowers (Sahagún 1950-82, Book 2, 66). Showing the significance of the number four and its multiples, the impersonator would be accompanied by eight young men and four warriors (Sahagún 1950-82, Book 2, 66). Another aspect of this custom that shows the significance of the number four, is the description of Sahagún about the four women who would wed the impersonator in the month preceding the Toxcatl festival (Sahagún 1950-82, Book 2, 67). At the end of this month, as the Toxcatl festival began, the impersonator was brought to a place called Acaquilpan or Cau altepec by canoe. Here he would go to a small temple called Tlaco chcalco, which he would then ascend. While walking up these stairs he would break the flute on which he had played the previous year on the steps of the temple (Sahagún 1950-82, Book 2, 68). When he would arrive at the top of the temple, Sahagún claims that he would then be seized by four priests who would sacrifice him as an offering to the sun (Sahagún 1950-82, Book 2, 68). Showing yet another example of the significance of the number four, together with the description of that the body of the impersonator would afterwards be carried down the steps by four men. Afterwards, Sahagún describes that his severed head was placed on a skull-rack called *tzompantli* (Sahagún 1950-82, Book 2, 68).

And so this would be the end of the impersonator of *Tezcatlipoca*, which according to Sahagún meant:

“None come to an end here upon earth with happiness, riches, and wealth”
(Sahagún 1950-82, Book 2, 68).

After all this, a new impersonator of *Tezcatlipoca* would be chosen and the cycle would repeat itself.

The part of the festival related to Huitzilopochtli consisted of the youths who make a representation of the deity of *Huitzilopochtli* from wood, feathers, and fish amaranth dough (Sahagún 1950-82, Book 2, 69). This image of *Huitzilopochtli* was then set up in a temple, after which offerings of incense and quail were made to it by everyone, from the common people to the king (Sahagún 1950-82, Book 2, 70). Around the image, the youths and the warriors would dance the Serpent dance, in which they would all hold hands and dance back and forth as to represent the movements of a snake. Also, the young women would dance the Popcorn dance, which owns its name to the crowns of popcorn these women had placed on their heads. These dances would all be accompanied by priests beating on the *huehuetl* (Sahagún 1950-82, Book 2, 72).

As the night fell, the dancing would stop and the next day the festival of Toxcatl would be over (Sahagún 1950-82, Book 2, 73).

6.1.1 Critical assessment of Sahagún his descriptions

Relating the description of the first part of the Toxcatl festival related to *Tezcatlipoca*, Guilhem Olivier (2002) has researched Sahagún his descriptions thoroughly. Olivier claims that it is probable that not always the representative of *Tezcatlipoca* was sacrificed, since a noble Nahuatl-speaking captive was not always available. This could be especially true if the impersonator had fulfilled his role especially well. Instead, a slave could be ritually executed (Olivier, 2002, 114-115). This comes to show the importance of not taking everything from Sahagún literally, and keeping in mind that certain aspects of this description might include misread metaphors. For instance, the descriptions about the human sacrifice of the deity impersonator could just as well be a wrong interpretation of certain metaphors related to the breaking of the flutes and the

breaking of relations between the gods and man, signalling the end of a cycle which will afterwards be repeated once more.

A further critical assessment of Sahagún his descriptions will be done by researching the role of the Flower-flute in the Toxcatl festival.

6.2 The role of the Flower-flute in the Toxcatl festival

In Fray Bernadino de Sahagún his descriptions of the festival of Toxcatl and the rituals accompanying it, it becomes evident that the Flower-flute possessed an important role related to the first part of the festival in which *Tezcatlipoca* is impersonated and honoured.

For instance, the person that was chosen to fulfil the role of the deity impersonator was taught how to play the flute well. It is also described that this impersonator was taught how to carry the flowers whilst playing the flute (Sahagún 1950-82, Book 2, 66), but this could be another metaphor relating to the flowery song of the Aztecs, thus perhaps meaning that the persons was taught how to play the flowery songs on the flute.

Furthermore, the description of the impersonator destroying the flute on the steps of the temple (Sahagún 1950-82, Book 2, 68) shows a strong relation of the instrument to this ritual and suspects a strong symbolical idea behind this ritual. In his work, Guilhem Olivier (2002) has also researched this relation of the instrument to the Aztec mythology. He claims that by observing Sahagún his descriptions, it is suggested that there existed several close links between *Tezcatlipoca*, the Flower-flute, and the king. The instrument was a way for *Tezcatlipoca* to communicate his will to the king, and the king thus likened himself to the flute of *Tezcatlipoca*. By breaking the flutes of the steps of the temple, both the origin of music myth was re-enacted, and the temporary break of relations between the people and the gods was symbolized. When a new impersonator was chosen, these relations were once again restored, the king was “reborn”, and the sound of the flute demonstrated a restored contact with *Tezcatlipoca* (Olivier 2002, 127).

This idea, together with the fact that the Aztecs were highly metaphorical in their ways, might shed new light on Sahagún his descriptions on the human sacrifice of the deity impersonator.

Perhaps, the descriptions about the human sacrifice of the deity impersonator could be a wrong interpretation of certain metaphors related to the breaking of the flutes and the breaking of relations between the gods and man, signalling the end of a cycle which will afterwards be repeated once more.

Therefore, it could be possible that the sacrifice of the deity impersonator never took place, but that it rather was a metaphor for an ending and a new beginning.

The significance of the Flower-flute during the festival of Toxcatl can also be seen in the fact that the Aztecs had a myth about the origins of music, which was correlated to *Tezcatlipoca* itself. Olivier (2002) claims that the myth of the origin of music was re-enacted during the Toxcatl festival. This is evident in a symbolical comparison of the deity impersonator slowly ascending the stairs of the temple, which is similar to the mythical ascent of *Tezcatlipoca* towards the sun. Also the name of the place where the final sacrifice was carried out is similar to the name of the city where the myth of the origin of music comes from, Chalco (Olivier 2002, 126). This comparison again shows the highly symbolical nature of the Aztec rituals.

6.2.1 Pictographic representations of the Flower-flute

The use of the Flower-flute in the Toxcatl festival can also be seen in several pictographic sources from Sahagún (1950-82) (Fig. 10, 11).

In one depiction it shows a “musician” in an elaborated costume while holding the Flower-flute (Fig. 10). In this image from the Florentine codex, a man can be seen standing to the left with two persons kneeling down before him. The man to the left seems to be the most important person in this picture, and is thus probably the impersonator of deity *Tezcatlipoca*. His headdress seems to contain several plumes on top of it, and seems to be an elaborate headdress. The object in his left hand seems to be flowers and leaves with some clouds coming off of it, perhaps symbolizing flowery speech. The object in his right hand seems to be a flute with only three holes in it. A strange aspect of this flute is that he is not holding it in front of his mouth but rather at his waist. The persons on the right seem to be kneeling for the person on the left, and the clouds coming from their mouths might be a symbol for their speech.



Figure 10. *The impersonator of Tezcatlipoca in the Codex Florentinus*
(After www.wdl.org, accessed 14-6-2015).

On the second depiction from the Florentine codex (Fig. 11), 5 people on top of a stone structure that highly resembles a temple can be seen. The people on this image seem to be engaged in an activity that revolves around the middle person. It seems as if 4 people are holding/restraining the middle person who is lying down. One of the persons is taking something out of the body from the middle person. Furthermore we can see a representation of broken flutes down the stairs of the temple.

This image likely represents the human sacrifice of the impersonator of deity *Tezcatlipoca*. On this image we can see the four priests holding the impersonator down, while one of the priests takes the heart from the impersonator. Furthermore it seems to be that the flutes falling down the stairs are the flower-flutes that would have been broken on the steps of the temple during this ritual. In the top left corner, a sun can be seen, which might be a reference to the Aztec deity of the sun *Huitzilopochtli*. Notable in both these images is that the number of finger holes is not correct, since there are five fingerholes depicted as opposed to the four fingerholes present on the studied flutes.

Both these images from Sahagún stress the importance of criticizing Sahagún in both his writings as in his drawings. An example of this might be that we should not take the depiction of the deity impersonator holding the flowers literally. Perhaps this holding of the flowers is a metaphor for the “Flowery song” of the Aztecs, which might also explain why the flowers are depicted in front of the impersonator his mouth and the flute is not.

The ritual human sacrifice depicted in the second image might also not be a true representation of true events. Perhaps this image signifies a metaphor for the previously described Aztec myth on the origin of music. The broken flutes along the steps of the depicted temple, together with the deity impersonator at the top of the temple, and the depicted sun above this temple, might suggest that this image actually represents the mythical ascent of *Tezcatlipoca* towards the sun, instead of solely a literal human sacrifice as Sahagún describes it. It could be possible that Sahagún misinterpreted certain aspects of the stories that had been told about these events, but this remains a case for further study.



Figure 11. *The sacrifice of the impersonator of Tezcatlipoca in the Codex Florentinus*
(After www.wdl.org, accessed 14-6-2015).

7. Conclusion

The aim of this thesis was to answer several questions about music in the Aztec culture and more specifically, answer the research question “What was the use and function of the Flower-flute in the Aztec culture in the Late-Postclassic period?”. In order to answer this question, this thesis has been divided into a number of chapters that treat each relevant aspect of the Aztec music culture to answer this posed question.

It has been established that the Aztecs possessed three different categories of music instruments: the idiophones, the membranophones, and the aerophones. The instruments from these categories were mainly played by priests, old men and old women during public, temple and court ceremonies. A distinction between two forms of music has been made: temple music, and court music. The temple music was done by specialized priests and played an important role in many rituals. The court music was performed by professional musicians and had less of a public ritual function, but more that of an entertainment function.

Furthermore, the central object of this thesis, the Flower-flute, has been researched, giving us a description of its visual, material, and musical characteristics. We now know that the flute was a rather small ceramic flute of about 20cm, possessed 4 finger holes, and was characterized by a flower-shaped bell at the ending of the flute, and two-or three- red stripes painted on the duct. Furthermore, it has been established that when playing the flute, the most logical and simple way to play was in a way that produced a good sounding western-like major pentatonic scale. It has also been established that it was possibly not of the greatest importance for the flute to sound clear and pure, but rather that rhythm played a more important role in the music of this instrument.

Furthermore, it has been established that the Flower-flute possessed an important role in the Toxcatl festival and was of great importance to the deity impersonator who stood central in this festival. In the year leading up to the Toxcatl festival, the impersonator would never appear in public without the Flower-flute, where he would play this flute to everyone he met. Both the impersonator itself and the Flower-flute appear to have a mainly symbolical meaning. The impersonator symbolized the deity *Tezcatlipoca*, and the flute symbolized the medium through which *Tezcatlipoca* spoke (and thus also symbolized the king, who also the voice of the gods).

The afterwards breaking of the flutes on the temple steps would symbolize two things; the temporary break of relations between god and man, and the origin of the music myth. Because of this, it is important to state the importance of not taking everything from the colonial sources literally. It is evident that the Aztecs were a highly symbolical culture, and the accounts of human sacrifices are a lot of times over exaggerated or simply false. At this stage, we cannot be sure whether the sacrifice of the deity impersonator happened or not, but it is important to state that the symbolical breaking of the flutes is a subject that should be looked into more. For instance, because the deity impersonator fulfilled the role of a mediator between the world of the gods and that of men, and was thus sacrificed instead of the ruler, it could be suggested that perhaps only the flute was symbolically sacrificed and not even the impersonator itself.

Having proposed a subject for further study, this thesis will conclude with some more unresolved issues which should be looked into. For instance, the red stripes on the duct of the flute were probably not an indication for the best position of the thumb when holding the flute with one hand as stated by Arnd Adje Both (2002). Rather these stripes hold a great resemblance to the reinforcing bands on reed flutes produced all over the world. Because of this, it can be suggested that these coloured on stripes may be a remnant of such older reed flutes, and may function as some sort of ancestor veneration with a solely symbolic function.

Also, due to the fact that the worldview of the Aztecs held a great importance to the number four (related to the four cardinal directions), and this number seems to recur in both the flute itself and many aspects related to the Toxcatl festival, it could be suggested that because the first four tones of the major pentatonic scale could be played easily and without much expertise, also might have held a symbolical meaning, thus assigning these specific tones to the four quadrants of the world. Whether this is true, is a subject for further investigation.

Summary (Abstract), Nederlands

In deze scriptie wordt het gebruik en de functie van muziek en de zogenaamde Flower-flute (bloemfluit) in de Azteekse cultuur besproken. Ook wordt er gekeken naar het Toxcatl festival, waar dit instrument een grote rol in speelde.

De Azteken kende drie verschillende categorieën van muziekinstrumenten; de aerofonen, membranofonen en de idiofonen, welke voornamelijk door priesters bij publieke rituelen werden bespeeld. Muziek werd in de Azteekse cultuur gezien als de stem van de goden, die op deze manier een vorm van communicatie tussen de wereld van de goden en de wereld van de mensen tot stand konden brengen. Dit was ook het geval met het zogenaamde Toxcatl festival waarbij de Bloemfluit een centrale rol speelde. Bij dit festival werd een gevangene gekozen om een jaar lang de god *Tezcatlipoca* te vertegenwoordigen, waarbij hij een jaar lang op de Bloemfluit moest spelen waarna hij de fluit uiteindelijk kapot gooide op de trede van een tempel. Achter dit festival en het gebruik van dit instrument er in zitten een hoop symbolische betekenissen, zoals het feit dat het stukgooien van de bloemfluit symbool staat voor de tijdelijke breuk van relaties tussen de goden en de mensheid.

De fluit is in deze scriptie ook als een geluids-artefact geanalyseerd, waarbij de symbolische betekenissen even achterwege worden gelaten. Zo is er een aannemelijke kans dat de fluit werd bespeeld door middel van een majeur pentatonische toonladder. Ook is er een mogelijkheid dat de fluit een meer ritmische functie had dan een puur melodische.

Het uiterlijk van de fluit bevat dan wel een aantal versieringen die dan wel erg symbolisch zijn; zo is op sommige fluiten het 4-tonalli teken aanwezig wat verwijst naar de 4 richtingen van de Azteekse cosmovisie. Ook bevat de fluit een versiering die wellicht als voorvaderverering gezien kan worden, namelijk de rode strepen die erg veel weg hebben van de versterkingen op de oudere rietfluiten.

Summary (Abstract), English

This thesis focusses on the use and function of music and the so called Flower-flute in the Aztec culture, as well as the Toxcatl festival, in which this instrument played an important role.

The Aztecs knew three different categories of music instruments; the aerophones, membranophones, and the idiophones. These instruments were mainly played by priests during public rituals. In the Aztec culture, music was seen as the voice of the gods through which the gods communicated with the world of man. This was also the case with the so called Toxcatl festival, in which the Flower-flute played a central part. During this festival, one prisoner was chosen to impersonate the deity *Tezcatlipoca* for one year. During this year he would play the Flower-flute after which he would break it on the stairs of a temple. In this festival and instrument, a lot of symbolical meanings are embedded; like the fact that the breaking of the flutes stood symbol for the temporary break of relations between the gods and man.

In this thesis, the Flower-flute has also been analysed as a sound artefact, in which there is no focus on the symbolical meanings of the flute. For instance, there is a possibility that this instrument was played in a major pentatonic scale. There is also a possibility that the flute had a more rhythmic function than a solely melodic function.

The exterior of the flute does contain some decorations that possess a symbolical meaning; on some flutes the 4-tonalli sign is present, which refers to the four cardinal directions of the Aztec cosmovision. The flute also possesses a decoration in the form of two or three red stripes that might have functioned as some sort of ancestor veneration since they seem to resemble the fortifications on older reed flutes.

Bibliography

Websites

www.oscarvandillen.com/tools_for_students/basic_elements_of_music_theory, last accessed on the 12th of June.

Books and articles

Ascher, R., 1961. Experimental Archaeology. *American Anthropologist, New Series*, 63(4), 793-816.

Both, A.A., 2002. Aztec flower-flutes: The symbolic organization of sound in Late Postclassic Mesoamerica. *Studien zur Musikarchäologie III*, 279-289.

Both, A.A., 2007. Aztec music culture. *The world of music* 49(2), 91-104.

Both, A.A., 2009. Music Archaeology: Some Methodological and theoretical considerations. *Yearbook for Traditional Music* 41, 1-11.

Chamorro, A., 1998. Mexica (Aztec or Nahua people), in D.A. Olsen and D.E. Sheehy (eds), *The Garland Encyclopedia of World Music Volume 2, South America, Mexico, Central America, and the Caribbean*. New York: Garland Publishing, 555-562.

Dúran, D., 1971. Book of the Gods and Rites and the Ancient Calendar. Oklahoma: University of Oklahoma Press.

Dúran, D., 1984. Historia de las Indias de Nueva España e islas de la Tierra Firme. Mexico

Hornbostel, E.M. and C. Sachs, 1961. Classification of Musical instruments. *The Galpin Society Journal* 14, 3-29.

Jansen, M., 2006. Archaeology and Indigenous Peoples: Attitudes Towards Power in Ancient Oaxaca, in J. Bintliff (ed), *A Companion to Archaeology*. Oxford: Blackwell Publishing, 235-252.

Kurath, G.R. and S. Martí, 1964. *Dances of Anahuac: The Choreography and Music of Precortesian Dances*. Chicago: Aldine Publishing.

León-Portilla, M., 1962. *The broken spears: The Aztec account of the conquest of Mexico*. Boston: Beacon Press.

Macquoy, S., 2014. Voorouderlijke muziek in een nieuwe context, Een etnoarcheologische vergelijking van de muziekinstrumenten en de functie, context en ideologie van de muziek van de Azteken met dat van de Neo-Azteken op het zócalo in Mexico-Stad, Mexico. Leiden (unpublished Ba thesis University of Leiden).

Martí, S., 1968. *Instrumentos musicales precortesianos*. Mexico: Instituto Nacional de Antropología e Historia.

Oler, W.M., 1970. Definition of Organology. *The Galpin Society Journal* 23, 170-174.

Olivier, G., 2002. The Hidden King and the Broken flutes: Mythical and Royal Dimensions of the Feast of Tezcatlipoca in Toxcatl, in E.Q. Keber (ed), *Representing Aztec Ritual: Performance, text, and image in the Work of Sahagún*. Colorado: University Press of Colorado, 107-175.

Olsen, D.A., 1998. Approaches to Musical Scholarship, In D.A. Olsen and D.E. Sheehy (eds), *The Garland Encyclopedia of World Music Volume 2, South America, Mexico, Central America, and the Caribbean*. New York: Garland Publishing, 6-27.

Olsen, D.A., 1998, A profile of the Lands and People of South America, Mexico, Central America, and the Caribbean, in D.A. Olsen and D.E. Sheehy (eds), *The Garland Encyclopedia of World Music Volume 2, South America, Mexico, Central America, and the Caribbean*. New York: Garland Publishing, 2-5.

Panofsky, E., 1972. Studies in Iconology: Humanistic Themes in the Art of the Renaissance. New York: Harper & Row, 5-9.

Sahagún B., 1997. *Primeros Memoriales. Paleography of Nahuatl Text and English translation by Thelma D. Sullivan*. Oklahoma: University of Oklahoma Press

Sahagún, B., 1950-1982. *The Florentine Codex* (Translated from the Aztec into by Anderson, A.J.O and Dibble, C.E.). Santa Fe: The school of American Research and the University of Utah.

Sheehy, D.E., 1998. The music of Mexico's Native people, in D.A. Olsen and D.E. Sheehy (eds), *The Garland Encyclopedia of World Music Volume 2, South America, Mexico, Central America, and the Caribbean*. New York: Garland Publishing, 549-551.

Smith, M.E., 2012. *The Aztecs*. Chichester: Wiley-Blackwell.

Smith, M.E., 2007. The Archaeology of Tezcatlipoca, in E. Badequedano (ed), *Tezcatlipoca: Trickster and Supreme Deity*. Colorado: University Press of Colorado. 7-39.

Stanford, T., 1966. A Linguistic analysis of music and dance terms from three sixteenth-century dictionaries in Mexican Indian languages. *Yearbook* 2, 101-159.

Stevenson, R., 1968. *Music in Aztec and Inca Territory*. Los Angeles: University of California Press.

Tresch, J. and E.I. Dolan, 2013, Toward a New Organology: Instruments of Music and Science, in A. Hui, J. Kursell, M.W. Jackson, *Osiris, Volume 28: Music, Sound, and the laboratory from 1750-1980*. Chicago: University of Chicago Press Journals, 278-298.

Tuerenhout, D.R. van, 2005. *The Aztecs: New Perspectives*. Santa Barbara: ABC-CLIO.

Figures

Figure on cover.

Courtesy of Ethnologisches Museum Berlin, 2015.

Figure 1.

Both, A.A., 2002. Aztec flower-flutes: The symbolic organization of sound in Late Postclassic Mesoamerica. *Studien zur Musikarchäologie III*, 283.

Figure 2.

Website of the Foundation for the Advancement of Mesoamerican Studies. Accessed on 14th of June 2015.

http://www.famsi.org/research/graz/magliabechiano/img_page145.html

Figure 3.

Website of World Digital Library. Accessed on 14th of June 2015.

<http://www.wdl.org/en/item/10096/view/1/637/>

Figure 4.

Both, A.A., 2002. Aztec flower-flutes: The symbolic organization of sound in Late Postclassic Mesoamerica. *Studien zur Musikarchäologie III*, 284.

Figure 5

Courtesy of Ethnologisches Museum Berlin, 2015.

Figure 6

Courtesy of Ethnologisches Museum Berlin, 2015.

Figure 7a,b.

Both, A.A., 2002. Aztec flower-flutes: The symbolic organization of sound in Late Postclassic Mesoamerica. *Studien zur Musikarchäologie III*, 286.

Figure 8.

Both, A.A., 2002. Aztec flower-flutes: The symbolic organization of sound in Late Postclassic Mesoamerica. *Studien zur Musikarchäologie III*, 285.

Figure 9.

Courtesy of Ethnologisches Museum Berlin, 2015.

Figure 10.

Website of World Digital Library. Accessed on 14th of June 2015.
<http://www.wdl.org/en/item/10096/view/1/430/>

Figure 11.

Website of World Digital Library. Accessed on 14th of June 2015.
<http://www.wdl.org/en/item/10096/view/1/180/>

List of Figures

Cover figure. Part of a Flower-flute with the *tonally* sign on it from the Ethnologisches Museum Berlin (Courtesy of the Ethnologisches Museum Berlin, 2015).

Figure 1 - Page 16.

The Aztec territory in Mesoamerica and the valley of Mexico in 1520 AD (Both 2002, 283).

Figure 2 – Page 21.

Musicians playing the Ayotl and Huehuetl in the Codex Magliabechiano (after www.famsi.org, accessed on 14-6-2015).

Figure 3 – Page 24.

Aztec Musicians playing the Huehuetl, Teponaztli, and gourd rattles in the Codex Florentinus (After www.wdl.org, accessed 14-6-2015).

Figure 4 – Page 28.

Aztec flower flutes from the Valley of Mexico (1350-1521 AD). Ethnologisches Museum Berlin, SMB PK, Drawing: C. Koch (Both 2002, 284).

Figure 5 – Page 30.

Image of flute CA 3631 (Courtesy of Ethnologisches Museum Berlin 2015).

Figure 6 – Page 30.

Image of Flute CA 3631 (Courtesy of Ethnologisches Museum Berlin 2015).

Figure 7a – Page 33.

Pitch-deviation per finger combination of flute IV CA 2535 in cent (A=440Hz).

Figure 7b – Page 33.

*Pitch-deviation per finger combination of flute IV CA 3631 in cent (A=440Hz). **O** = fingerhole open, **I** = Fingerhole closed (Both 2002, 286).*

Figure 8 – Page 34.

Playing posture (Flute IV Ca 2553, Ethnologisches Museum Berlin, SMB PK) (Both 2002, 285).

Figure 9 – Page 37

Bell of flute IV CA 2535 with the tonally sign on it (Courtesy of the Ethnologisches Museum Berlin).

Figure 10 – Page 43.

The impersonator of Tezcatlipoca in the Codex Florentinus (After www.wdl.org, accessed 14-6-2015).

Figure 11 – Page 44.

The sacrifice of the impersonator of Tezcatlipoca in the Codex Florentinus (After www.wdl.org, accessed 14-6-2015).